BROCADE FASTIRON CX SERIES SWITCHES

CAMPUS NETWORK

A Powerful, Scalable, and Flexible Solution for Campus Network Access

HIGHLIGHTS

- Industry's first Power over Ethernet Plus (PoE+) switch with stacking capabilities and redundant power supplies
- Flexible enterprise campus access switches with 24- and 48-port models in compact 1U form factors
- Built for next-generation campus convergence applications with up to 48 PoE ports or 26 PoE+ ports per system
- Up to 24 SFP 100/1000 fiber-optic ports per switch for government and military network initiatives or for applications requiring additional security and resiliency
- Easily expandable up to 384 ports, utilizing Brocade IronStack technology and dedicated high-performance stacking ports
- High-availability modular design with redundant hot-swappable power supplies and removable fans
- Optional 10 Gigabit Ethernet (GbE) ports, enabling high-speed connectivity to the aggregation/core layers from a stackable solution
- Hardware-based sFlow traffic monitoring capabilities, with Brocade IronShield 360 providing real-time protection from network- and host-based attacks

The Brocade® FastIron® CX Series of switches provides new levels of performance, scalability, and flexibility required for today's enterprise campus networks. With advanced capabilities, these switches deliver performance and intelligence to the network edge in a flexible 1U form factor that helps reduce infrastructure and administrative costs.

Designed for wire-speed and non-blocking performance, FastIron CX switches include 24- and 48-port models, in both Power over Ethernet (PoE) and non-PoE versions. Utilizing built-in 16 Gbps stacking ports and Brocade IronStack technology, organizations can stack up to eight switches into a single logical switch with up to 384 ports. PoE models support the emerging Power over Ethernet Plus (PoE+) standard to deliver up to 30 watts of power to edge devices, enabling next-generation campus applications.

BUILT FOR NEXT-GENERATION CAMPUS CONVERGENCE

FastIron CX switches can deliver both power and data across network connections, providing a single-cable solution for campus edge devices such as Voice over IP (VoIP) phones, video

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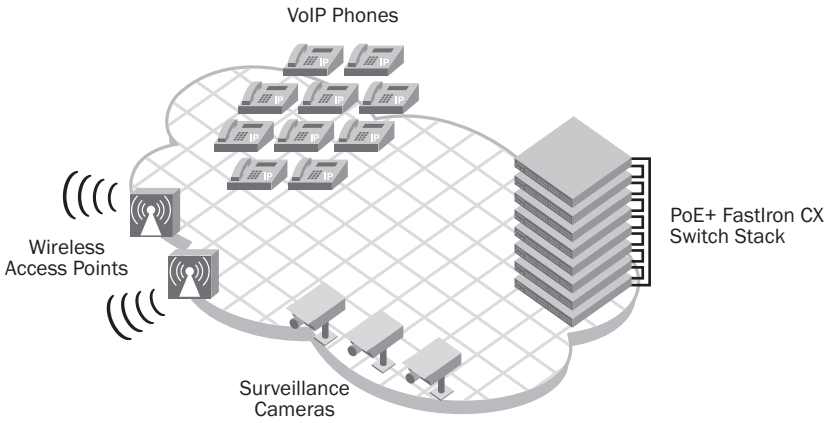
Figure 1.
FastIron CX switches deliver converged power and data to campus edge devices.



POWER OVER ETHERNET PLUS

In 2003, PoE became a standard with the approval of IEEE 802.3af, eliminating the need to have separate LAN cables for data and electrical cables for power. Class 3 PoE switches can deliver up to 15.4 watts of power across each port, providing converged power and data to devices such as VoIP phones, surveillance cameras, and wireless access points.

While 15.4 watts of power is sufficient for many devices, PoE+ is an emerging standard (802.3at) that leverages modern CAT5e cabling to provide 30 watts of power per port—enabling higher-powered next-generation campus convergence applications such as videoconferencing phones and pan/tilt surveillance cameras. 802.3at PoE+ is fully backward compatible with 802.3af PoE, and FastIron CX switches use LLDP to negotiate port settings dynamically.

surveillance cameras, and wireless access points (see Figure 1). The switches are compatible with industry-standard VoIP equipment as well as legacy IP phones.

These switches support the emerging PoE Plus standard (802.3at) to provide up to 30 watts of power to each device. This high-powered solution simplifies wiring for next-generation solutions such as videoconferencing phones, pan/tilt surveillance cameras, and 802.11n wireless access points. The PoE capability reduces the number of power receptacles and power adaptors while increasing reliability and wiring flexibility.

The 24-port FastIron CX switch model can supply full Class 3 (15.4 watts) or full PoE+ (30 watts) power to every port, and the 48-port model can supply full Class 3 power to every port or full PoE+ power to 26 ports. The switches can power a combination of PoE and PoE+ devices while staying within the switches' 820-watt power budget.

Plug-and-Play Operations for Powered Devices

FastIron CX switches support the IEEE 802.1AB Link Layer Discovery Protocol (LLDP) and ANSI TIA 1057 Link Layer Discovery Protocol-Media Endpoint Discovery (LLDP-MED) standards that enable organizations to deploy interoperable multivendor solutions for unified communications.

Configuring IP endpoints such as VoIP phones can be a complex task requiring manual and time-consuming configuration. LLDP and LLDP-MED address this challenge, providing a standard, open method for configuring, discovering, and managing network infrastructure. The LLDP protocols help reduce operational costs by simplifying and automating network operations. For example, LLDP-MED provides an open protocol for configuring Quality of Service (QoS), security policies, Virtual LAN (VLAN) assignments, PoE power levels, and service priorities.

INCREASED FLEXIBILITY AND SCALABILITY

FastIron CX switches provide a wide range of flexibility and scalability advantages for dynamic and growing campus networks.

Simplified, High-Performance Stacking

FastIron CX switches include two dedicated 16 Gbps stacking ports, providing simple and robust expandability for future growth at the network edge. Leveraging IronStack technology, up to eight FastIron CX switches can be stacked into a single logical switch. This stacked switch has only a single IP address to simplify management. When new members are added to the stack, they automatically inherit the stack's existing configuration file, enabling true plug-and-play network expansion. Organizations can obtain console access to the stack through any of the stack members, eliminating the need to know which member is the primary controller.

Throughout the stack, there is 64 Gbps of switching bandwidth, essentially eliminating the need to work around inter-switch bottlenecks (see Figure 2). With dedicated stacking ports for scalability within the rack, optional 10 Gigabit Ethernet (GbE) ports are freed up for high-speed connectivity to the aggregation or core layers—providing maximum flexibility in a compact campus access switch.

10 GbE ports can be trunked from different members of the stack to optimize performance and availability. For added flexibility, IronStack also supports the use of 10 GbE ports with fiber-optic cabling for stacking across racks, floors, and buildings.

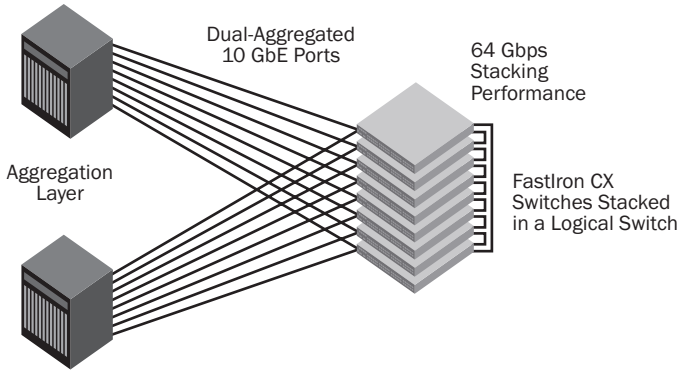


Figure 2.
FastIron CX switches can be stacked into a single logical switch and then redundantly connected to the aggregation layer using aggregated 10 GbE ports.

Optional 10 GbE Module

All FastIron CX switches accept an optional 10 GbE module containing two XFP ports, enabling high-bandwidth connectivity to the aggregation or core layers, or extended switch stacking across long distances. Up to eight 10 GbE links can be aggregated in a stack, providing 80 Gbps of bandwidth between the wiring closet and the aggregation layer.

REDUCED POWER CONSUMPTION

In today's rapidly growing business environments, organizations need to minimize power consumption throughout the entire IT infrastructure. FastIron CX switches are designed to intelligently manage power usage, extending "green" initiatives to the wiring closet.

Power to campus devices is automatically negotiated using the LLDP-MED protocol, providing the powered devices with exactly the amount of power they need. If devices go into sleep mode, they can request less power from the network, minimizing power usage in the campus environment. At as low as 1.22 watts/Gbps for non-PoE models and 1.41 watts/Gbps for PoE models, FastIron CX switches consume minimal power for the performance and functionality they provide.

HIGH RELIABILITY IN A COMPACT FORM FACTOR

Often reserved for data center-class solutions, FastIron CX switches optionally contain dual hot-swappable, load-sharing, redundant power supplies (see Figure 3). The modular design also has a removable fan assembly. These features provide another level of availability for the campus wiring closet in a compact form factor.

Additional design features include intake and exhaust temperature sensors and fan spin detection to aid in fast identification of abnormal or failed operating conditions to help minimize mean time to repair.

COMPREHENSIVE ENTERPRISE-CLASS SECURITY

FastIron CX switches utilize the Brocade IronWare® operating system, providing a rich security suite for Layer 2 and Layer 3 services, Network Access Control (NAC), and Denial of Service (DoS) protection. IronWare security features include protection against TCP SYN and ICMP DoS attacks, Spanning Tree Root Guard and BPDU Guard to protect network spanning tree operations, and broadcast and multicast packet rate limiting. Additional security features including dynamic ARP inspection and DHCP snooping to protect against address spoofing and man-in-the middle attacks.

Network Access Control (NAC)

Organizations can rely on key features such as multi-device port authentication and 802.1X authentication with dynamic policy assignment to control network access and perform targeted authorization on a per-user level. In addition, FastIron CX switches support enhanced Media Access Control (MAC) policies with the ability to deny traffic to and from MAC addresses on a per-VLAN basis. This powerful tool helps organizations control access policies per endpoint device.

Standards-based NAC also facilitates best-in-class solutions for authenticating network users and validating the security posture of connecting devices. Support for policy-controlled MAC-based VLANs provides additional control of network access, enabling policy-controlled assignments of devices to Layer 2 VLANs.

Traffic Monitoring and Lawful Intercept

Organizations might need to set up lawful traffic intercept due to today's heightened security environment. For example, in the United States, the Communications Assistance for Law Enforcement Act (CALEA) requires them to be able to intercept and replicate data traffic directed to a particular user, subnet, port, and so on. This capability is particularly essential in networks implementing VoIP phones. FastIron CX switches provide the capability to meet this requirement through Access Control List (ACL)-based mirroring, MAC filter-based mirroring, and VLAN-based mirroring.

Figure 3.
FastIron CX switches feature internal redundant power supplies and a swappable fan assembly, in addition to dedicated stacking ports and an out-of-band management port.

Fiber to the Desktop for Security-Sensitive Applications

FastIron CX switches provide up to 24 SFP 100/1000 fiber-optic ports for government and military network initiatives or for applications requiring additional security and resiliency. For these types of network environments, fiber-optic cable is the ultimate transmission medium, because it does not emit electromagnetic signals that can be intercepted. And, unlike copper wires, optical fiber cannot be tapped without detection. Fiber-optic network links are also immune to Radio Frequency Interference (RFI) and Electro-Magnetic Interference (EMI).

Threat Detection and Mitigation

FastIron CX switches utilize embedded hardware-based sFlow traffic sampling to extend Brocade IronShield® 360 security out to the network edge. This unique and powerful closed-loop threat mitigation solution uses best-of-breed intrusion detection systems to inspect traffic samples for possible network attacks.

In response to a detected attack, Brocade IronView® Network Manager (INM) can automatically apply a security policy to the compromised port, stopping network attacks in real time without administrator intervention.

Advanced Multicast Features

FastIron CX switches support a rich set of Layer 2 multicast snooping features that enable advanced multicast services delivery. Internet Group Management Protocol (IGMP) snooping for IGMP version 1, 2, and 3 is supported. Support for IGMPv3 source-based multicast snooping improves bandwidth utilization and security for multicast services. To enable multicast service delivery in IPv6 networks, FastIron CX switches support Multicast Listener Discovery (MLD) version 1 and 2 snooping, the multicast protocols used in IPv6 environments.

NETWORK RESILIENCY THROUGH FAULT DETECTION

Software features such as Virtual Switch Redundancy Protocol (VSRP), Brocade Metro-Ring Protocol (MRP) v1 and v2, Rapid Spanning Tree Protocol (RSTP), protected link groups, 802.3ad Link Aggregation, and trunk groups provide alternate paths for traffic in the event of a link failure. Sub-second fault detection utilizing Link Fault Signaling (LFS) and Remote Fault Notification (RFN) helps ensure fast fault detection and recovery.

Enhanced spanning tree features such as Root Guard and BPDU Guard prevent rogue hijacking of a spanning tree root and maintain a contention- and loop-free environment, especially during dynamic network deployments. In addition, FastIron CX switches support port loop detection on edge ports that do not have spanning tree enabled. This capability protects the network from broadcast storms and other anomalies that can result from Layer 1 or Layer 2 loopbacks on Ethernet cables or endpoints.

Protected link groups minimize disruption to the network by protecting critical links from loss of data and power. In a protected link group, one port in the group acts as the primary or active link, and the other ports act as secondary or standby links. The active link carries the traffic and, if it goes down, one of the standby links takes over.

UniDirectional Link Detection (UDLD) monitors a link between two FastIron CX switches and brings down the ports on both ends of the link if the link fails at any point between the two devices.

FastIron CX switches also support stability features such as port flap dampening, single-link Link Aggregation Control Protocol (LACP), and port loop detection.

ADVANCED CAPABILITIES

To meet a wide range of requirements, FastIron CX switches provide full Layer 3 capabilities, along with metro features for connecting buildings and campuses.

Full Layer 3 Capabilities

Layer 3 functionality enhances the capability of FastIron CX switches as an enterprise solution. Organizations can use Layer 3 features such as IPv4 OSPF and RIP routing, policy-based routing, Virtual Router Redundancy Protocol (VRRP), and Dynamic Host Configuration Protocol (DHCP) Relay. Organizations can remove complexity from end-to-end Layer 3 networks by utilizing Layer 3 capabilities built into every FastIron CX switch.

For example, data-rich applications such as video distribution require scalable multicast services from the edge to the core. Internet Group Management Protocol (IGMP) and Protocol-Independent Multicast (PIM) snooping improve bandwidth utilization in Layer 2 networks by restricting multicast flows to only the switch ports that have multicast receivers.

In Layer 3 networks, support for IGMP (v1, v2, and v3), IGMP Proxy, PIM-SM, PIM-SSM, and PIM-DM multicast routing optimizes network utilization and traffic routing for multicast applications. PIM snooping and Passive Multicast Router Insertion (PMRI) can be combined, ensuring multicast distribution in Layer 2 networks. FastIron CX switches use the PIM Snooping feature to acquire multicast routes, enabling them to intelligently switch multicast traffic rather than blindly broadcasting multicast traffic in the Layer 2 domain.

Advanced (-ADV) models include BGP routing capabilities, enabling remote offices to connect FastIron CX switches to service provider networks.

Metro Features Connecting Buildings and Campuses

Because FastIron CX switches contain Metropolitan Area Network (MAN) features, organizations can use them to connect a distributed enterprise. In this type of environment, FastIron CX switches provide rich services using MRP (v1 and v2) for building resilient ring-based topologies, VLAN stacking, and advanced multicast capabilities—including IGMP v1/v2/v3 and Multicast Listener Discovery (MLD) v1/v2 snooping for controlling multicast traffic for high-bandwidth content delivery.

SIMPLIFIED, SECURE MANAGEMENT BASED ON OPEN STANDARDS

FastIron CX switches provide simplified, standards-based management capabilities that help organizations reduce administrative time and effort while securing their networks.

Easy Deployment with Auto-Configuration

FastIron CX switches support auto-configuration, simplifying deployment with a truly plug-and-play experience. Organizations can use this feature to automate IP address and feature configuration of the switches without requiring a highly trained network engineer onsite. When the switches power up, they automatically receive an IP address and configuration from DHCP and Trivial File Transport Protocol (TFTP) servers.

Brocade IronView Network Manager

Brocade INM provides unified management for the FastIron CX along with the rest of the Brocade Ethernet network. It displays network- and application-level traffic information in graphical detail to greatly simplify network operations, provisioning, troubleshooting, and alarm reporting.

As a result, organizations can accurately monitor overall networking operation, identify hot spots, and quickly diagnose and troubleshoot issues before they develop into widespread network problems. In addition, Brocade INM provides multilevel access security on the console and a secure Web-based management interface that keeps out unauthorized users while providing simple and flexible access.

Open Standard Management

FastIron CX switches include an industry-standard Command Line Interface (CLI) and support Secure Shell (SSHv2), Secure Copy (SCP), and SNMPv3 to restrict and encrypt management communications to the system. In addition, support for Terminal Access Controller Access Control System (TACACS/TACACS+) and RADIUS authentication helps ensure secure operator access.

Out-of-Band Management

FastIron CX switches include an RJ-45 Ethernet port dedicated to out-of-band management, providing a remote path to manage the switches, regardless of the status or configuration of the data ports.

IDEAL FOR ETHERNET STORAGE TRAFFIC

Modern iSCSI Storage Area Network (SAN) environments require a high-performance network to reliably deliver block storage to servers. FastIron CX switches provide robust performance capabilities to handle servers that are saturating multiple GbE links.

Dedicated 16 Gbps stacking ports and the IronStack technology enable organizations to expand their iSCSI storage environments with no additional management. 10 GbE ports can provide high-speed links between floors or buildings for data protection or for high-availability solutions. In addition, internal redundant power supplies and a swappable fan assembly provide the high-availability features required in shared storage environments.

BROCADE GLOBAL SERVICES

To help organizations get the most value from their technology investments, Brocade Global Services offers a variety of services with comprehensive hardware and 24×7 software support, including software fixes and new releases. Organizations can also utilize Brocade Professional Services to implement and validate the functionality of Brocade products. Leveraging the Brocade Network Monitoring Service (NMS), organizations can maximize the availability and performance of their critical application environments while reducing infrastructure cost and complexity.

WARRANTY

The FastIron CX is covered by the Brocade Assurance™ Limited Lifetime Warranty for as long as the original purchaser continues to own and use the product. The warranty covers the product hardware, including internal power supplies and internal fans, as well as software defect repairs. To streamline the product replacement process, qualified customers can directly access the Brocade Knowledge Portal to initiate advanced replacement on registered products.

MAXIMIZING INVESTMENTS

To help optimize technology investments, Brocade and its partners offer complete solutions that include education, support, and services. For more information, contact a Brocade sales partner or visit www.brocade.com.

BROCADE FASTIRON CX SERIES FEATURE COMPARISON

	FastIron CX 624S	FastIron CX 648S	FastIron CX 624S-F	FastIron CX 624S-HPOE	FastIron CX 648S-HPOE
Switching bandwidth (data rate, full duplex)	152 Gbps	200 Gbps	152 Gbps	152 Gbps	200 Gbps
Forwarding bandwidth (data rate, full duplex)	114 Mpps	150 Mpps	114 Mpps	114 Mpps	150 Mpps
Stacking bandwidth (data rate, full duplex)	64 Gbps	64 Gbps	64 Gbps	64 Gbps	64 Gbps
10/100/1000 Mbps RJ-45 ports	20	44	n/a	20	44
100/1000 Mbps SFP Ports	n/a	n/a	20	n/a	n/a
10/100/1000 Mbps combination ports	4	4	4	4	4
10 Gigabit Ethernet XFP/CX4 ports	2 (optional)	2 (optional)	2 (optional)	2 (optional)	2 (optional)
16 Gbps CX4 stacking ports	2	2	2	2	2
Maximum PoE Class 3 ports	n/a	n/a	n/a	24	48
Maximum PoE+ ports	n/a	n/a	n/a	24	26
Power supplies	2 removable (second optional)	2 removable (second optional)	2 removable (second optional)	2 removable (second optional)	2 removable (second optional)
Optional FRUs					
10 Gigabit Ethernet module	FCX-2XG	FCX-2XG	FCX-2XG	FCX-2XG	FCX-2XG
Second power supply	RPS13	RPS13	RPS13	RPS14	RPS14
Replacement fan unit	FCX-S-FAN	FCX-S-FAN	FCX-S–FAN	FCX-S-POE-FAN	FCX-S-POE-FAN

BROCADE FASTIRON CX SERIES SPECIFICATIONS

System Architecture	
Connector options	10/100/1000 ports: RJ-45 (fixed) 1 Gbps SFP combo ports: SX, LX, LHA, LHB, 1000Base-BX, CWDM 10 Gbps XFP ports: CX4, 1310-MM, SR, LR, ER, ZR, ZRD Stacking ports: fixed CX4 (fixed) Out-of-band Ethernet management: RJ-45 (fixed) Console management: DB9
Maximum MAC addresses	32,000
Maximum VLANs	4096
Maximum STP (spanning trees)	255
Maximum routes (in hardware)	16,000
Trunking	Maximum ports per trunk: 8 Maximum trunk groups: 32
Maximum Jumbo Frame size	9000 bytes
IEEE standards compliance	• 802.1AB LLDP/LLDP-MED • 802.1D-2004 MAC Bridging • 802.1p Mapping to Priority Queue • 802.1s Multiple Spanning Tree • 802.1w Rapid Spanning Tree • 802.1x Port-based Network Access Control • 802.3 10 Base-T • 802.3ab 1000 Base-T • 802.3ad Link Aggregation (Dynamic and Static) • 802.3ae 10 Gigabit Ethernet • 802.3af Power over Ethernet • 802.3ak CX4 • 802.3u 100 Base-TX • 802.3x Flow Control • 802.3z 1000Base-SX/LX • 802.3 MAU MIB (RFC 2239)

Layer 2 switching	• 802.1s Multiple Spanning Tree • 802.1x Authentication • Auto MDI/MDIX • BPDU Guard, Root Guard • Dual-Mode VLANs • Dynamic VLAN Assignment • Dynamic Voice VLAN Assignment • Fast Port Span • Flexible Static Multicast MAC Address Configuration • GARP VLAN Registration Protocol • IGMP Snooping (v1/v2/v3) • Link Fault Signaling (LFS) • MAC Address Locking • MAC-Layer Filtering • MAC Learning Disable; Port Security • MLD Snooping (v1/v2) • Multi-device Authentication • Per VLAN Spanning Tree (PVST/PVST+/PVRST) • PIM–SM Snooping • Policy-controlled MAC-based VLANs • Port-based Access Control Lists • Port-based, ACL-based, MAC Filter-based, and VLAN-based Mirroring • Port Loop Detection • Port Speed Downshift and Selective Auto-negotiation • Private VLAN • Private VLANs and Uplink Switch • Protected Link Groups • Protocol VLAN (802.1v), Subnet VLAN • Remote Fault Notification (RFN) • Single-instance Spanning Tree • Single-link LACP • Trunk Groups • Trunk Threshold • Uni-Directional Link Detection (UDLD)
Layer 3 routing	• ECMP • Host routes • IPv4 Static Routes • L3/L4 ACLs RIP v1/v2 announce • OSPF v2 • PIM-SM, PIM-SSM, PIM-DM • RIP v1/v2 • Routed Interfaces • Route-only Support • Routing Between Directly Connected Subnets • Virtual Interfaces • Virtual Route Redundancy Protocol (VRRP)

Advanced functionality *(included with –ADV models)*	• BGP
Metro features	• Metro-Ring Protocol (v1, v2) • Virtual Switch Redundancy Protocol (VSRP) • VLAN Stacking (Q-in-Q) • VRRP • Topology Groups
Quality of service	• ACL Mapping and Marking of ToS/DSCP • ACL Mapping to Priority Queue • ACL Mapping to ToS/DSCP • Classifying and Limiting Flows Based on TCP Flags • DHCP Relay • DiffServ Support • Honoring DSCP and 802.1p • MAC Address Mapping to Priority Queue • QoS Queue Management using Weighted Round Robin (WRR), Strict Priority (SP), and a combination of WRR and SP
Traffic management	• ACL-based inbound rate limiting and traffic policies • Broadcast, multicast, and unknown unicast rate limiting • Inbound rate limiting per port • Outbound rate limiting per port and per queue
Management	
Management and control	• Auto Configuration • Configuration Logging • Digital Optical Monitoring • Display Log Messages on Multiple Terminals • Embedded Web Management • Foundry Discovery Protocol (FDP) • Industry-Standard Command Line Interface (CLI) • Integration with HP OpenView for Sun Solaris, HP-UX, IBM AIX, and Windows • IronView Network Manager (INM) Version 3.2 or later • MIB Support for MRP, Port Security, MAC Authentication, and MAC-based VLANs • Out-of-band Ethernet Management • RFC 783 TFTP • RFC 854 TELNET Client and Server • RFC 1157 SNMPv1/v2c • RFC 1213 MIB-II • RFC 1493 Bridge MIB • RFC 1516 Repeater MIB • RFC 1573 SNMP MIB II • RFC 1643 Ethernet Interface MIB • RFC 1643 Ethernet MIB • RFC 1724 RIP v1/v2 MIB • RFC 1757 RMON MIB • RFC 2068 Embedded HTTP • RFC 2131 DHCP Relay • RFC 2570 SNMPv3 Intro to Framework • RFC 2571 Architecture for Describing SNMP Framework • RFC 2572 SNMP Message Processing and Dispatching • RFC 2573 SNMPv3 Applications • RFC 2574 SNMPv3 User-based Security Model • RFC 2575 SNMP View-based Access Control Model SNMP • RFC 2818 Embedded HTTPS • RFC 3176 sFlow • SNTP Simple Network Time Protocol • Support for Multiple Syslog Servers

Embedded security	• Bi-level Access Mode (Standard and EXEC Level) • EAP pass-through support • IEEE 802.1X username export in sFlow • Protection against Denial of Service (DOS) attacks
Secure management	• Authentication, Authorization, and Accounting (AAA) • Advanced Encryption Standard (AES) with SSHv2 • RADIUS/TACACS/TACACS+ • Secure Copy (SCP) • Secure Shell (SSHv2) • Username/Password
Mechanical	
Enclosure	Side-to-back airflow; 1U, 19-inch EIA-compliant, power from non-port side
Size	FastIron CX 624S and 648S models: Width: 44.0 cm (17.3 in) Height: 4.4 cm (1.7 in) Depth: 38.6 cm (15.2 in) FastIron CX 624S-HPOE and 648S-HPOE models: Width: 44.0 cm (17.3 in) Height: 4.4 cm (1.7 in) Depth: 44.0 cm (17.3 in)
Weight	FastIron CX 624S and 648S models: 4.0 kg (8.8 lbs) FastIron CX 624S-HPOE and 648S-HPOE models: 4.5 kg (9.9 lbs)
Environment	
Temperature	Operating temperature: 32° to 104°F (0° to 40°C) Storage temperature: –23° to 158°F (–25° to 70°C)
Humidity	Relative humidity: 5% to 95%, non-condensing
Altitude	Storage altitude: 10,000 ft (3000 m) maximum
Acoustic	51 to 63 dB
Power	
Power supplies	Up to two internal, redundant, field-replaceable, load-sharing AC power supplies
Power inlet	C13
Input voltage	Typical 100 to 240 VAC
Input line frequency	50 to 60 Hz
Certification	
Electromagnetic emissions	FCC Class A (Part 15); EN 55022/CISPR-22 Class A; VCCI Class A
Environmental regulatory compliance	RoHS Compliant (6 of 6); WEEE compliant

BROCADE FASTIRON CX SERIES POWER AND THERMAL SPECIFICATIONS

	Max Current at 100 VAC (Amps)	Max Current at 200 VAC (Amps)	Max Total Power Draw[1] (Watts)	Max System Power Draw[2] (Watts)	Max Thermal Output[3] (BTU/Hr)	Energy Efficiency (Watts/Gbps)
FastIron CX 624S	1.09	0.51	94	94	319	1.23
FastIron CX 624S-F	1.00	0.58	102	102.1	348	1.34
FastIron CX 648S	1.39	0.63	122	122	416	1.22
FastIron CX 624S-HPOE[4]	1.09	0.58	509	107	365	1.41
FastIron CX 648S-HPOE[4]	1.72	0.94	970	167	570	1.67

[1] Total power drawn from the source and consumed by the switch and attached PoE devices. Class 3 devices assumed on all ports.

[2] Power drawn from the source and consumed only by the switch.

[3] Thermal output of the switch.

[4] With two power supplies installed.

WARRANTY

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